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BY: [signature] Date: August 31, 2004

PATENT
MAIL STOP AMENDMENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re:	Patent Application of Mario Noli	: Group Art Unit: 3729
Conf. No.:	7784	:
Appln. No.:	10/005,943	: Examiner: Paul D. Kim
Filed:	December 5, 2001	:
For:	METHOD FOR MANUFACTURING A SEALED TEMPERATURE PROBE AND PROBE THUS MANUFACTURED	: Attorney Docket : No. **6023-143US** : (MI/X13874)

REQUEST FOR RECONSIDERATION

This is in response to the Office Action dated May 27, 2004 (Paper No. 20040524) in the above application. This response is being timely filed by September 27, 2004 in view of the submission herewith of a Petition for Extension of Time (one month).

Claims 10-17 are presently pending in the application, with claims 11-14 and 17 being withdrawn from consideration.

At the outset, it is noted that the Examiner has not acknowledged the Information Disclosure Statement filed with the RCE Request on April 9, 2004. Consideration of the prior art submitted and return of an initialed copy of the PTO/SB/08A form are respectfully requested.

Applicant is pleased to note the Examiner's withdrawal of all of the rejections in the previous Office Action of November 26, 2003. However, Applicant strenuously objects to the Examiner's present action in this application because (1) the phrase "the same as or compatible

with" rejected as being indefinite has been present in the claims from the outset of this application and has always been understood by the Examiner without prior objection; and (2) the Examiner has improperly re-searched the invention, despite the fact that the claims have not significantly changed since the outset of this application. This action violates the principle of "compact prosecution" and is therefore unwarranted. Nevertheless, Applicant will respond on the merits to each of the rejections.

The Examiner has rejected claims 1 (sic 10), 15 and 16 under 35 U.S.C. § 112, second paragraph, as being indefinite with respect to the phrase "the same as or compatible with," as recited in lines 7 and 10 of claim 10. Although the Examiner's rejection is not entirely understood, it appears that the Examiner is asking in what way the thermoplastic material is the same as or compatible with the insulating material, e.g., by characteristics or size or material? The Examiner requests clarification.

This rejection is respectfully but strenuously traversed for several reasons. First, as noted above, the Examiner has apparently had no problem understanding this phrase throughout the prior examination of this application, which is now in its third Office Action on the merits, and the allegedly indefinite phrase has been continuously present in the claims. Second, if the Examiner had a problem with this terminology, he should have raised the issue with Applicant and his representatives at the personal interview at the Patent Office on March 26, 2004, when the phrase could have been discussed in detail. Third, it is noted that the same phrase appears in the granted claims of European Patent EP 1 213 572 B1, a copy of which was forwarded to the Examiner with the Amendment Accompanying RCE Request on April 9, 2004. Therefore, the phrase was certainly definite enough for the European Patent Office and should not be indefinite for the USPTO.

In any event, it is submitted that the term "the same as or compatible with" is clear and definite from a reading of the present specification. First, the Examiner should have no trouble with the term "the same as." Therefore, it appears that the Examiner's problem is with the term "compatible with," since he asks what is compatible with insulating material? However, this term is clearly defined in the specification. Thus, at paragraph 0004 of the substitute specification, it is pointed out that in known probes, the sealing is carried out in two ways,

namely by a resin covering or an overmolding of the sensor with the same thermoplastic material as the outer sheath (insulating material) "or with another material compatible therewith, i.e., capable of melting and mixing therewith." Further, in paragraph 0006, it is stated that the covering and the sheath are fused, so that compatibility also implies the ability to fuse.

Thus, it is clear from these paragraphs that the compatibility of the thermoplastic material and the insulating material refers to the capability of the two materials to melt, mix and fuse with each other. Moreover, since the overmolding of a sensor with such a thermoplastic material is known in prior art probes, one of ordinary skill in the art will readily understand what is meant by the term "compatible with." Accordingly, the indefiniteness rejection under 35 U.S.C. § 112 is improper, and reconsideration and withdrawal are respectfully requested.

The Examiner has rejected claim 10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,665,653 of Bare et al. ("Bare"). The Examiner contends that Bare teaches a process of encapsulating an electrochemical sensor by introducing the sensor 603 and exposed length of wire (connected with bonding pads shown in Fig. 5) into a covering element 401 comprising a first thermoplastic material 301 (Fig. 3), and covering the sensor and exposed length of wire by overmolding the sensor and the exposed length of wire with a second thermoplastic material 701 (Fig. 9). This rejection is respectfully but strenuously traversed for the reasons set forth in detail below.

First, the Examiner is reminded that the present invention is directed to a method for manufacturing a temperature probe in which the probe has a cable with at least one pair of conducting wires, each wire being insulated by a sheath of insulating material, and an exposed length of wire at one end of the cable where a sensor is soldered to the at least one pair of conducting wires at the exposed length of wire. The sensor and the exposed lengths of wire are overmolded with a thermoplastic material the same as or compatible with the insulating material. As explained in the Background of the Invention section of the present application and as understood by one skilled in the art, this overmolding achieves a perfect seal thanks to fusion of the covering with the cable sheath (see paragraphs 0004 and 0006 of the specification). As shown in the drawings of the present application, this overmolding with material M results in a complete encapsulation of the sensor and exposed wires to form a single body and a perfect seal

by fusing together the insulating material of the cable C and the thermoplastic overmolding material M. This is what one skilled in the art understands by the term "overmolding."

In contrast, Bare does not concern a temperature probe mounted on a cable and does not even concern overmolding with a thermoplastic material. Instead, Bare concerns a potting process, i.e., a process in which a potting material, such as a liquid epoxy, which is liquid at room temperature, is poured into a mold, and is then cured (see column 2, lines 57-59 and 66-67 of Bare). That is, Bare uses a thermosetting material, not a thermoplastic material for his potting.

Moreover, the potting process of Bare is aimed at obtaining a product in which active sensing areas of the sensors are not encapsulated by the potting material, so as to allow the electrochemical sensors to come in contact with a solution for measuring the concentration of chemicals in the solution (see column 1, lines 6-9; column 2, lines 8-16; column 2, lines 59-65; and column 3, lines 1-2). That is, the method of Bare is exactly opposite to the present invention which aims at completely covering the sensor with a controlled thickness of insulating material which must be perfectly sealed on the cable. Thus, in a temperature probe, such as that to which the present invention is directed, it is not necessary to allow a solution to come into contact with active areas of the sensor, because the temperature sensor can measure temperature through the thermoplastic covering which encapsulates the sensor. Such a difference between the present invention and Bare demonstrates the improper lengths to which the Examiner has gone in trying to find prior art far outside the field to which the present invention is directed.

The fact that Bare is directed to a completely different art than the present invention results in Bare failing to teach or suggest several important elements of the presently claimed invention. First, whereas the presently claimed method is directed to a sensor on a cable with conducting wires insulated by a sheath of insulating material, no such cable, wire or insulating sheath is present in Bare. Bare discloses only a sensor assembly with a substrate (printed circuit board or ceramic pad) on which sensor elements, contact pad and other electronics are mounted (see, for example, column 5, lines 16-19).

Second, the "covering material 401" identified by the Examiner in Bare does not comprise a first thermoplastic material the same as or compatible with an insulating material, as in the presently claimed invention. Thus, there is no insulating material in Bare to be compatible

with, and as noted above, the "covering element" of Bare is made from a curable liquid, such as a liquid silicone, that results in the flexible tool 401 (see column 4, lines 52-62). One skilled in the art readily understands that a cured plastic is a thermoset plastic, not a thermoplastic.

Third, Bare does not teach any overmolding of the sensor with a second thermoplastic material, because the second material 701 is also a curable liquid potting material and is poured into the flexible tool 401 which is being used as a mold (see column 6, lines 49-52).

Accordingly, Bare lacks at least the cable, insulating material, first thermoplastic material, second thermoplastic material, and the overmolding step of the presently claimed invention, as well as being directed to a totally different art than the art of manufacturing temperature probes. Therefore, the rejection under 35 U.S.C. § 102 is totally improper and should be withdrawn.

The Examiner has rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Bare. The Examiner contends that Bare teaches the elements set forth above and that the covering element is a covering tube 401 (Fig. 7a) which is placed and blocked in a mold 101 for preventing movement of the covering tube. The Examiner acknowledges that Bare does not teach injection molding for overmolding, but notes that the covering tube is formed by pouring or injection as disclosed in Fig. 3 and column 4, lines 52-59. The Examiner argues that the overmolding process of Fig. 9 is almost identical to the process of Fig. 3, and the encapsulating process of Fig. 9 is performed either by pouring or actively drawing into the tool. The Examiner concludes that it would have been obvious to one skilled in the art to overmold (encapsulate) the sensor and the wire with thermoplastic material (column 5, lines 1-3) by injection molding in order to cover the sensor and the wire. This rejection is also respectfully but strenuously traversed for the reasons set forth in detail below.

Aside from the differences already discussed above with respect to the § 102 rejection of claim 10, Bare also does not teach placing and blocking a covering tube in a mold for preventing movement of the covering tube upon injection of a plastic material. Instead, Bare merely uses a rigid tool 101 to contain the flexible tool 401 which is being used as a mold. Moreover, such molding is not an overmolding of the sensor and the exposed lengths of wires, since the flexible tool 401 of Bare forms a seal over at least a portion of the active sensing areas 604 of the sensors

603, because it is necessary that the entire active sensing area of the sensor 603 be exposed in operation if the sensor is to provide accurate information (see Figs. 7a and 7b and column 6, lines 34-47 of Bare).

With respect to the Examiner's reference to thermoplastic material at column 5, lines 1-3 of Bare, it is submitted that the Examiner's reliance on this teaching is misplaced. Although this sentence appears to list thermoplastic as an example of a curable liquid, one skilled in the art readily recognizes that a cured liquid is not a thermoplastic, but a thermoset. Thus, curing results in reaction of a plastic so that it becomes infusible and chemically inert, such as by the action of heat and catalysts (see Hawley's *Condensed Chemical Dictionary*, page 318 (13th Edition, 1997)), a copy of which is attached. Thus, the reference to thermoplastic at column 5, line 2 of Bare is either a mistake, or it refers to the uncured liquid. In sum, the disclosure of Bare as a whole is not concerned with the use of thermoplastics, but rather, thermosets, such as epoxies and silicones.

Accordingly, the rejection of claim 15 as unpatentable over Bare is also improper, and reconsideration and withdrawal of the rejection are respectfully requested.

Applicant notes the Examiner's indication of allowability of claim 16 if rewritten in independent form. However, in view of the above remarks, it is submitted that claim 16 may remain as a dependent claim from allowable claim 10. Further, in view of the above-argued allowability of claim 10, it is submitted that withdrawn claims 11-14 and 17 are also allowable and should be reinstated and allowed with the remaining claims in this application.

In view of the above remarks, it is submitted that all of the claims in the application are in condition for allowance, and reconsideration and any early Notice of Allowance are respectfully solicited.

Respectfully submitted,

MARIO NOLI

August 31, 2004
(Date)

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WWS:rc
Attachment: Hawley's *Condensed Chemical Dictionary*, title page and page 318 (13th Edition, 1997)

Hawley's

Condensed Chemical

Dictionary

THIRTEENTH EDITION

Revised by

Richard J. Lewis, Sr.

JOHN WILEY & SONS, INC.
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rubber, tobacco. (2) Any substance that combats disease by killing bacteria or that restores health by chemical means.
See curing.

curcumin. (tumeric yellow; 1,7-bis(4-hydroxy-methoxyphenyl)-1,6-heptadiene-3,5-dione).
CI 75300). $[CH_3OC_6H_3(OH)CH:CHCO]_2CH_2$.
Properties: Orange-yellow needles. Mp 183C. Soluble in water and ether; soluble in alcohol.
Derivation: The coloring principle from curcuma.
Use: Analytical reagent, food dye, biological stain. As an acid-base indicator it is brownish-red with alkalies, yellow with acids (pH range 7.4–8.6); also an indicator for boron.

cure. (1) The length of time required for a plastic compound to stay in the mold for complete reaction so it becomes infusible and chemically inert. (2) To change the physical properties of a material by chemical reaction or vulcanization. This is usually accomplished by the action of heat and catalysts.

curie. (Ci). The official unit of radioactivity, defined as exactly $3.70 \times 10_{10}$ disintegrations per sec. This decay rate is nearly equivalent to that exhibited by 1 g of radium in equilibrium with its disintegration products. A millicurie (mCi) is 0.001 curie. A microcurie (μCi) is one-millionth curie.

Curie law. The magnetic susceptibility of a paramagnetic substance varies inversely as the absolute temperature.

Curie, Marie S. (1867–1934). Born in Warsaw, Poland, she and her husband Pierre made an intensive study of the radioactive properties of uranium. They isolated polonium in 1898 from pitchblende ore. By devising a tedious and painstaking separation method, they obtained a salt of radium in 1912, receiving the Nobel prize in physics for this achievement in 1903 jointly with Becquerel. In 1911, Mme. Curie alone received the Nobel prize in chemistry. Her work laid the foundation of the study of radioactive elements which culminated in control of nuclear fission.
See Rutherford, Sir Ernest.

curie point. Transition temperature above which ferromagnetism ceases to exist.

Curie-Weiss law. The magnetic susceptibility of a paramagnetic substance is inversely proportional to the increase of its temperature above a certain fixed temperature characteristic of the substance.

curing. Conversion of a raw product to a finished and useful condition, usually by application of heat and/or chemicals that induce physicochemical changes. Many food products require aging under specified temperature conditions. The more common types of curing are as follows:
(1) Meats: Use of sodium chloride, sugars, sodium nitrite, sodium nitrate, ascorbic acid. These not only act as preservatives, but also aid in color retention. Some types are subsequently smoked. Conversion of collagen to gelatin occurs as a result of "hanging" meat for several days.
(2) Leather: Treatment of hides and skins with tanning agents of vegetable or mineral origin. This converts the protein structure into a firm and durable product as a result of complexing reactions.
See tanning.
(3) Tobacco: Exposure for 3–5 days to temperatures from 37 to 65C to reduce moisture content, convert starches to reducing sugars, and discharge the chlorophyll, followed by aging from 1 to 5 years to remove odors and improve smoking quality.
(4) Cheese: Aging for 9–12 months at 4.5–10C to develop sharp flavor; the process is also called ripening.
(5) Rubber: Addition of sulfur and accelerator, followed by exposure to heat, which effects cross-linking. This converts the material from a thermoplastic to a thermosetting product. High-energy radiation can also be used.
See vulcanization.

curium. Cm. Synthetic radioactive element of atomic number 96, aw 244, valences 3, 4. Isotopes available: 244 and 242 (gram quantities).
Properties: Silvery-white metal. D 13.5, mp 1340C. Chemically reactive. More electropositive than aluminum. An α emitter. Biologically it is a bone-seeking element. Forms compounds such as CmO_2, Cm_2O_3, CmF_3, CmF_4, $Cm(OH)_3$, $CmCl_3$, $CmBr_3$, $CmI_3 \cdot Cm_2(C_2O_4)_3$.
Use: Thermoelectric power generation for instrument operation in remote locations on earth or in space vehicles.
See actinide series.

Curl, Robert F., Jr. (1933–). An American who won the Nobel prize for chemistry along with Sir Harold W. Kroto and Richard E. Smalley in 1996, the 100th anniversary of Alfred Nobel's death. The trio won for the discovery of the C_{60} compound called buckminsterfullerene. He graduated from Rice University and received a Ph.D. from the University of California, Berkeley in 1957.
See buckminsterfullerene; Kroto, Sir Harold W.; Smalley, Richard E.

current density. In an electroplating bath or solution, the electric current per unit area of the object or surface being plated. Expressed in amperes per square centimeter or, more usually, amperes per square decimeter.

Curtius rearrangement. Formation of isocyanates by thermal decomposition of acyl azides.

cutback. A coating substance or varnish that has been diluted or thinned.